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ATTY. DOCKETOOD CENTER APPLY EXETON NO.: FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE 7933.208USU1 INFORMATION DISCLOSURE STATEMENT <u>1 2001</u> BY APPLICANT APPLICANT (Use several sheets If necessary) CEIVED CHU et al. DEC 2 7 2001 GROUP ART UNIT: FILING DATE TECH CENTER 1600/2900 March 13, 2001 U.S. PATENT DOCUMENTS **FILING DATE** SUBCLASS NAME CLASS DOCUMENT DATE **EXAMINER'S** IF APPLICABLE INITIALS NUMBER **FOREIGN PATENT DOCUMENTS** SUBCLASS | TRANSLATION **COUNTRY** CLASS DOCUMENT DATE OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) Alexander, A.J.; Thibault, P.; Boyd, R.K.; Curtis, J.M.; Rinehart, K.L., "Collision Induced Dissociation of Peptide Ions", Int. J. Mass Spectrom. Ion Processes, 1990, 98, 107-134. Ambihapathy, K.; Yalcin, T.; Leung, H.-W.; Harrison, A.G., "Pathways to Immonium lons in the Fragmentation of Protonated Peptides", J. Mass Spectrom., 1997, 32, 209-215. Bouchonnet, S.; Hoppilliard, Y., "Proton and Sodium Ion of Affinities of Glycine and Its Sodium Salt in the Gas Phase. Ab Initio Calculations", Org. Mass Spectrom., 1992, 27, 71-76. Burlet, O.; Orkiszewski, R.S.; Ballard, K.D.; Gaskell, S.J., "Charge Promotion of Low-energy Fragmentations of Peptide Ions", Rapid Commun. Mass Spectrom., 1992, 6, 658-662. Cantor, C.R.; Schimmel, P.R., "Part 1: The Conformation of Biological Macromolecules", Biophysical Chemistry, W.H. Freeman and Co.: San Francisco, 1980, 275-307. Chu, I.K.; Guo X.; Lau, T.-C.; Siu, K.W.M., "Sequencing of Argentinated Peptides by Means of Electrospray Tandem Mass Spectrometry*, Anal. Chem., 1999, 71, 2364-2372. Cox, K.A.; Gaskell, S.J.; Morris, M.; Whiting, A., "Role of the Site of Protonation in the Low-Energy Decompositions of Gas-Phase Peptide Ions", J. Am. Soc. Mass Spectrom., 1996, 7, 522-531. Dawson, P.H.; French, J.B.; Buckley, J.A.; Douglas, D.J.; Simmons, D., "The Use of Triple Quadrupoles for Sequential Mass Spectrometry 1-The Instrument Parameters", Org. Mass Spectrom., 1982, 17, 205-211. Dawson, P.H.; French, J.B.; Buckley, J.A.; Douglas, D.J.; Simmons, D., "The Use of Triple Quadrupoles for Sequential Mass Spectrometry 2-A Detailed Case Study", Org. Mass Spectrom., 1982, 17, 212-217. Deng, H.; Kebarle, P.J., "Binding Energies of Silver Ion-Ligand, L, Complexes AgL2+ Determined from Ligand-Exchange Equilibria in the Gas Phase", Phys. Chem. A 1998, 102, 571-579. Dongré, A.R.; Somogyi, Á.; Wysocki, V.H., "Surface-induced Dissociation: An Effective Tool to Probe Structure, Energetics and Fragmentation Mechanisms of Protonated Peptides", J. Mass Spectrom., 1996, 31, 339-350. Dongré, A.R.; Jones, J.L.; Somogyi, Á.; Wysocki, V.H., "Inluence of Peptide Composition, Gas-Phase Basicity, and Chemical Modification on Fragmentation Efficiency: Evidence for the Mobile Proton Model", J. Am. Chem. Soc., 1996, 118, 8365-8374. Edman, P., "Sequence Determination", Mol. Biol. Biochem. Biophys., 1970, 8, 211-255. Fenn, J.B.; Mann, M.; Meng, C.K.; Wong, S.F.; Whitehouse, C.M., "Electrospray Ionization for Mass Spectrometry of Large Biomolecules", Science, 1989, 246, 64-71.

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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT APPLICANT APPLICANT APPLICANT APPLICANT TECH CENTER 1600/2900 CHU et al. FILING DATE GROUP ART UNIT:

Figeys, D.; van Oostveen, I.; Ducret A.; Aebersold, R., Protein Identification by Capillary Zone Electrophoresis/Microelectrospray Ionization-Tandem Mass Spectrometry at the Subfemtomole Level*, *Anal. Chem.* 1996, 68, 1822-1828.

Grese, R.P.; Cerny, R.L.; Gross, M.L., "Metal Ion-Peptide Interactions in the Gas Phase: A Tandem Mass Spectrometry Study of Alkali Metal Cationized Peptides", *J. Am. Chem. Soc.*, 1989, 111, 2835-2842.

Grese, R.P.; Cerny, R.L.; Gross, M.L., "Gas-Phase Interactions of Lithium Ions and Dipeptides", J. Am. Chem. Soc., 1990, 112, 5089-5104.

Hu, P.; Gross, M.L., "Strong Interactions of Anionic Peptides and Alkaline Earth Metal Ions: Metal-Ion-Bound Peptides in the Gas Phase", J. Am. Chem. Soc., 1992, 114, 9153-9160.

Hu, P.; Gross, M.L., "Gas-Phase Anionic Complexes of Alkali Metal Ions and Peptides: Structure and Collision Activated Decompositions", J. Am. Soc. Mass Specrom., 1993, 5, 137-143.

Hu, P.; Gross, M.L., "Gas-Phase Interactions of Transition-Metal Ions and Di- and Tripeptides: A comparision with Alkaline-Earth-Metal-Ion Interactions", J. Am. Chem. Soc., 1993, 115, 8821-8828.

Hunt, D.F.; Yates, J.R., III; Shabanowitz, J.; Winston, S.; Hauer, C.R., "Protein sequencing by tandem mass spectrometry", *Proc. Natl. Acad. Sci.*, 1986, 83, 6233-6237.

Johnson, R.S., Martin, S.A., Bieman, K., "Collision-Induced Fragmentation of (M+H)* lons of Peptides.Side Chain Specific Sequence lons", *Int. J. Mass Spectrom. Ion Processes*, 1988, 86, 137-154.

Jones, J.L.; Dongré, A.R.; Somogyi, Á.; Wysocki, V.H., "Sequence Dependence of Peptide Fragmentation Efficiency Curves Determined by Electrospray Ionization/Surface-Induced Dissociation Mass Spectrometry", J. Am. Soc. Chem., 1994, 116, 8368-8369.

Klassen, J.S.; Anderson, S.G.; Blades, A. T.; Kebarle, P., "Reaction Enthalpies for $M^{\dagger}L = M^{\dagger} + L$, Where $M^{\dagger} = Na^{\dagger}$ and K^{\dagger} and L = Acetamide, N-Methylacetamide, N, N-Dimethylacetamide, Glycine, and Glycyglycine, from Determinations of the Collision-Induced Dissociation Thresholds", J. Phys. Chem. 1996, 100, 14218-14227.

Leary, J. A.; Williams, T.D.; Bott, G., "Strategy for Sequencing Peptides as Mono- and Dilithiated Adducts Using a Hybrid Tandem Mass Spectrometer", Rapid Commun. Mass Spectrom., 1989, 3, 192-196.

Leary, J.A.; Zhou, Z.; Ogden, S.A.; Williams, T.D., "Investigations of Gas-Phase Lithium-Peptide Adducts: Tandem Mass Spectrometry and Semiempirical Studies", *J. Am. Soc. Mass Spectrom.*, 1990, 1, 473-480.

Lee, S.-W.; Kim, H.S.; Beauchamp, J.L., "Salt Bridge Chemistry Applied to Gas-Phase Peptide Sequencing: Selective Fragmentation of Sodiated Gas-Phase Peptide Ions Adjacent to Aspartic Acid Residues", *J. Am. Chem. Soc.*, 1998, 120, 3188-3195.

Lee, V.W.-M.; Li, H.; Lau, T.-C.; Guevremont, R.; Siu, K.W.M., "Relative Silver(I) Ion Binding Energies of α-Amino Acids: A Determination by Means of the Kinetic Method", *J. Am. Soc. Mass Spectrom.*, 1998, 9, 760-766.

Lee, V.W.-M.; Li, H.; Lau, T.-C.; Siu, K.W.M., "Structures of b and a Product lons from the Fragmentation of Argentinated Peptides", J. Am. Chem. Soc., 1998, 120, 7302-7309.

Li, H.; Siu, K.W.M.; Guevremont, R.; Le Blanc, J.C.Y., "Complexes of Silver(I) With Peptides and Proteins as Produced in Electrospray Mass Spectrometry", J. Am. Soc. Mass Spectrom. 1997, 8, 781-792.

Matsudaira, P., Ed. A Practical Guide to Protein and Peptide Purification for Microsequencing, 2nd ed.; Academic Press: San Diego, 1993; pp 37-39.

McCormack, A.L.; Somogyi, Á.; Dongré, A.R.; Wysocki, V.H., "Fragmentation of Protonated Peptides: Surfaces-Induced Dissociation in Conjunction with a Quantum Mechanical Approach", *Apal. Chem.*, 1993, 65, 2859-2872.

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GROUP ART UNIT:

March 13, 2001

1642

McLafferty, F.W., "Tander Mass Spectrometry", Science, 1981, 214, 280-287.

Narula, S.S.; Mehra, R.K.; Winge, D.R.; Armitage, I.M., "Establishment of the Metal-to-Cysteine Connectivities in Silver-Substituted Yeast Metallothionein", J. Am. Chem. Soc., 1991, 113, 9354-9358.

Nold, M.J.; Wesdemiotis, C.; Yalcin, T.; Harrison, A.G., "Amide bond dissociation in protonated peptides. Structures of the Nterminal ionic and neutral fragments", Int. J. Mass Spectrom. Ion Processes, 1997, 164, 137-153.

Papayannopoulos, I.A., "The Interpretation of Collision-Induced Dissociation Tandem Mass Spectra of Peptides", Mass Spectrom. Rev., 1995, 14, 49-73.

Renner, D.; Spiteller, G., "Linked Scan Investigation of Peptide Degradation Initiated by Liquid Secondary Ion Mass Spectrometry", Biol. Environ. Mass Spectrom., 1988, 15, 75-77.

Shevchenko. A.: Jensen. O.N.: Podteleinikov, A.V.; Sagliocco, F.; Wilm, M.; Vorm, O.; Mortensen, P.; Shevchenko, A.; Boucherie, H.; Mann, M., "Linking genome and proteome by mass spectrometry: Large-scale identification of yeast proteins from two dimensional gels", Proc. Natl. Acad. Sci. U.S.A., 1996, 93, 14440-14445.

Smith, R.D.; Loo, J.A.; Ogorzalek Loo, R.R.; Busman, M.; Udseth, H.R., "Principles and practice of electrospray ionization-mass spectrometry for large polypeptides and proteins", Mass Spectrom. Rev., 1991, 10, 359-451.

Stillman, M.J.; Presta, A.; Gui, Z.; Jiang, D.-T., Metal-Based Drugs; Gielen, M., Ed.; Freund: London, 1994; Vol.1, 375-393.

Summerfield, S.G.; Whitting, A.; Gaskell, S.J., "Intra-ionic interactions in electrosprayed peptide ions", Int. J. Mass Spectrom. lon Processes, 1997, 162, 149-161.

Tang, X.; Ens, W.; Standing, K.G.; Westmore. J.B., "Daughter Ion Mass Spectra from Cationized Molecules of Small Oligopeptides in a Reflecting Time-of-Flight Mass Spectrometer", Anal. Chem., 1988, 60, 1791-1799.

Tang, X.-J.; Thibault, P.; Boyd, R.K., "Fragmentation Reactions of Multiply-Protonated Peptides and Implications for Sequencing by Tandem Mass Spectrometry with Low-Energy Collision-Induced Dissociation*, Anal. Chem., 1993, 65, 2824-2834.

Teesch, L.M.; Adams, J., "Intrinsic Interactions between Alkaline-Earth Metal Ions and Peptides: A Gas-Phase Study", J. Am. Chem. Soc., 1990, 112, 4110-4120.

Teesch, L.M.; Adams, J., "Fragmentation of Gas-Phase Complexes between Alkali Metal Ions and Peptides: Metal Ion Binding to Carbonyl Oxygens and Other Neutral Functional Groups*, J. Am. Chem. Soc., 1991, 113, 812-820.

Teesch, L.M.; Orlando, R.C.; Adams, J., "Location of the Alkali Metal Ion in Gas-Phase Peptide Complexes", J. Am. Chem. Soc., 1991, 113, 3668-3675.

Wilm, M.S.; Mann, M., "Electrospray and Taylor-Cone theory, Dole's beam of macromolecules at last?", Int. J. Mass Spectrom. Ion Proc., 1994, 136, 167-180.

Yalcin, T.; Khouw, C.; Csizmadia, I.G.; Peterson, M.R.; Harrison, A.G., "Why Are B Ions Stable Species in Peptide Spectra?", J. Am. Soc. Mass Spectrom., 1995, 6, 1165-1174.

Yalcin, T.; Csizmadia, I.G.; Peterson, M.R.; Harrison, A.G., "The Structure and Fragmentation of B_n ($n \ge 3$) Ions in Peptide Spectra", J. Am. Soc. Mass Spectrom., 1996, 7, 233-242.

Zhao, H.; Reiter, A.; Teesch, L.M.; Adams, J., "Gas-Phase Fragmentations of Anionic Complexes between Peptides and Alkaline Earth Metal Ions: Structure-Specific Side-Chain Interactions", J. Am. Chem. Soc., 1993, 115, 2854-2863.

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